

This network was situated above the external surface of the glands, and minute filaments were seen to proceed from it into the interior of the glands. These extremely delicate fibres were found between the endothelial cells of the membrana propria, or in the glandular epithelial cells. Their ultimate termination in the latter was not positively ascertained. The nodular points of the surface reticulum frequently showed small nerve cells. The author believes that this network takes its origin from the nerve fibres which course in the muscular substance of the uterus, and, accompanied by some intermuscular connective tissue, proceed to the boundary line of the mucous membrane. (*Centr. f. Gynäk.*, Sept. 11th. *N. Y. Med. Record*, Nov. 27, 1880.)

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#### THE DETERMINATION OF THE POSITION OF OBJECTS IN SPACE.

—At the session of the Boston Society of Medical Sciences, Oct. 21, 1879 (reported in *Boston Med. and Surg. Journal*, Nov. 11th), Dr. H. P. Bowditch spoke briefly of some experiments which he had made bearing on the question as to the *relative degree of assistance which we get from our sense of touch and muscular sense, and from our sense of sight, in the determination of the position of objects in space.*

It would seem, at first glance, as if the delicacy of the visual sense were much greater than that of the tactile sense; yet, as a matter of fact, we constantly use the latter in connection with the so-called muscular sensibility to correct the former; thus in detecting the flaws in a piece of nice joiner's work.

Dr. Bowditch's own experiments were to study the point whether the use of the sight or of the muscular sense best fixes the exact position of an object in the memory. To this end he had brought a small glass bead into different positions on the table, at times with the eyes open, but without placing it with the hand; at times with the eyes closed, while the finger was used to place the bead, and had then tried under which of these two conditions he was best able to locate the bead subsequently with the end of a knitting-needle, the eyes of course being closed. The results were as follows:

Location by touch: minimal error, 8 mm.; maximal error, 38 mm.; average, 19 mm.

Location by sight: minimal error, 8 mm.; maximal error, 33 mm.; average, 11.4 mm.

Dr. Bowditch observed that he was well aware that it was not exact to speak of the sense of sight in these experiments, since in reality the tests principally concerned the ocular muscles.

Another method, not yet tested, would be to try comparative estimates of size of objects by the use of sight and of touch.

In the discussion that followed, Dr. Blake suggested that the best form of object for this purpose would be a raised circle, round which the finger should be carried, since with small objects more could be felt than would be exposed to sight from any one point of view.

Dr. Hay spoke of various conditions which modify the judgment of the eye, as whether a line is horizontal or perpendicular, etc.

Dr. James said that these observations of Dr. Bowditch brought to mind the experiment of Helmboltz, who found that his ability to reconverge his eyes upon an object (finger) held up before him was increased if before opening his eyes he touched the object with his finger.

Dr. Bolles spoke of the degree to which education (which may be excessively rapid) comes into these problems as a complicating factor ; as for example in the case of type-setters.

The delicacy of muscular sense, as compared with sight, is shown in the ease with which we move a slide under the microscope through the minutest distances.

Dr. Wadsworth thought it would be hardly fair to compare the efficiency of sight with that of touch in estimating the size of objects, since our very notion of size and distance requires the use of both senses, one to supplement the other. Certainly by sight alone we could acquire no idea of distance.

Dr. Bowditch admitted this as regards sight, but said that with touch alone (including muscular sense) it is manifestly possible to acquire quite accurate notions of distance, as in the case of the blind. Dr. Bowditch further suggested that behind education there might be anatomical and physiological reasons for the greater accuracy of different sets of muscles ; as, for instance, the varying richness of their nerve supply.

Dr. Dwight thought that the importance of this point could be overrated. The abducens oculi, for example, receives a larger supply of nerve fibres than any of the other ocular muscles, yet its functional power is not greater than theirs.

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Among others, the following have been recently published on the anatomy and physiology of the nervous system :

RAGOSIN and MENDELSSOHN, Graphic Investigation as to the Movements of the Brain in the Living Man. *St. Petersb. Med. Wochenschr.*, Sept. 25th. DEBOVE and GOMBAULT, On the Sensory Decussation in the Medulla. *Arch. de Neurologie*, I, July, 1880. OTT, The Dilatation of the Pupil as an Index of the Path of the Sensory Impulses in the Spinal Cord. *Jour. of Phys.*, II, v and vi, July, 1880. GRAY, The Physiological Anatomy of the Cord and the Motor Tract of the Cerebrum. *Ann. Anat. and Surg. Soc. of Brooklyn*, Oct. WESTPHAL, On Paradoxical Muscle Contraction. *Centralbl. f. Nervenheilk.*, Oct. BUFALINI, On the Preparation of the Cylinder Axis of the Nerve Fibre. *La Sperimentale*, Nov. SPITZKA, A Remarkable Peculiarity of the Anthropoid Brain. *Science*, July 17th.

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b.—PATHOLOGY OF THE NERVOUS SYSTEM AND MIND,  
AND PATHOLOGICAL ANATOMY.

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NEURITIS.—Leyden, *Charité Annalen*, Bd. v. (abstr. in *St. Petersb. Med. Wochenschr.*, No. 44), after the report of a case of multiple neuritis ending fatally in ten months, gives the following general data as to the pathological anatomy and symptomatology of the disorder :

I.—*Pathological Anatomy of Neuritis.*

1. *Simple acute neuritis or perineuritis*, characterized by swelling, hyperæmia and hemorrhage of the sheath. This form is at the bottom of many neuralgias, and marks itself by its changeability and tendency to extend itself. In it there is no nuclear proliferation or degeneration of the nerve substance.

2. *Chronic perineuritis*, consisting in thickening of the sheath without disease of the nerve, may exist without showing itself by any symptoms, but may also cause, occasionally, severe pain. To this form belong the chronic neuritis nodosa and the eccentric neuroma formations.

3. *Degenerative neuritis* (parenchymatous neuritis of Joffroy) leading to atrophy of the nerve with thickening of the nerve sheath, myositic muscular atrophy, and pigmentation of the muscles.

This form may occur *primarily*, as (a) traumatic (Erb) ; (b) rheumatic ; (c) saturnine (lead paralysis) ; (d) degenerative neu-